



ASSESSMENT OF COMMON ETIOLOGICAL FACTORS OF GINGIVAL RECESSION

Dr. Maya S. Indurkar¹ | Dr. Namita Dewan²

¹Prof., HOD & PG Guide, Department of Periodontology, Govt. Dental College And Hospital, Aurangabad, Maharashtra, 431001.

²Post Graduate student, Department of Periodontology Govt. Dental College And Hospital, Aurangabad, Maharashtra, 431001

ABSTRACT

Aims : Recession defects are one of the most common findings in periodontal problems affecting individuals of almost all ages to some degree. The purpose of the present study is to evaluate common etiological factors of gingival recession and hence its treatment and/or prevention.

Methods and Material: A total of 120 individuals suffering from gingival recession were examined. Data was collected by an interview with the help of a proforma and then the clinical examination was carried out. The presence of gingival recession was recorded using Miller's classification of gingival recession. Various indices like Silness and Loe Plaque Index, Greene and Vermillion Oral Hygiene Index, Russel's periodontal Index were recorded.

Statistical analysis: The data thus obtained was subjected to statistical analysis using Chi square test.

Results: The prevalence of gingival recession was found to increase with age. High frequency of gingival recession was seen in males (61.6%) compared to females. Gingival recession was commonly seen in mandibular incisors, lateral incisors and canines. The most common cause for gingival recession was dental plaque accumulation (93.3%) followed by faulty toothbrushing (75.8%). Other causes were smokeless tobacco habit (30%), frenal pull (15.8%) and malposition.(15.8%).

Conclusions: It is important to identify the cause of gingival recession in a patient so that prevention can be done or appropriate treatment can be given.

KEYWORDS: gingival recession, etiology, plaque and calculus.

Introduction:

Gingival recession is the location of the gingival margin apical to the cemento-enamel junction.¹ The term "marginal tissue recession" is considered to be more accurate than "gingival recession," since the marginal tissue may have been alveolar mucosa.² Recession defects are one of the most common findings in periodontal problems affecting individuals of almost all ages to some degree.³ It may be localized or generalized, and frequently occurs in patients with periodontal disease as well as in subjects with healthy gingiva.⁴ The etiological factors for gingival recession are high muscle attachments, frenum pull, trauma from occlusion, use of hard tooth brush, traumatic tooth brushing, tooth malposition and iatrogenic factors. Localized gingival recession may also be associated with malpositioned teeth.⁵ Marginal tissue recession can cause major functional and esthetic problems. It has been clinically related to higher incidence of root caries, attachment loss, hypersensitivity and esthetic consideration.⁶

The purpose of the present study was to evaluate common etiological factors of gingival recession and hence its prevention and/or treatment.

Material and Methods: A total of 120 Individuals from the outpatient Department of Periodontology in Government Dental College, Aurangabad suffering from gingival recession were examined. A total of 74 males and 46 females were examined.

Depending upon the age the subjects were divided into three groups

Group I - 15 to 30 years

Group II - 31 to 45 years

Group III - Above 45 years

The following data was collected from each patient.

Age, Sex, habit of Smoked or smokeless tobacco, tooth brushing technique of each patient was recorded. Frenum attachment, tooth position, restorations were observed in each group. Oral Hygiene index (Greene and Vermillion, 1964) Plaque index (silness and loe, 1967) and Russells periodontal index (1956) were recorded and calculated for each patient. Patients were regarded as light tobacco chewers if they chewed tobacco less than or equal to 5 times a day and they were regarded as heavy tobacco chewers if they chewed tobacco more than 5 times a day. Subjects were asked about the brushing technique, whether horizontal or vertical. According to position of the frenum subjects were graded as having high or normal frenum attachment. The position of the tooth associated with recession was also observed. The tooth was considered as mal-positioned if it was labially placed, rotated or in cross bite. The presence of any cervical restoration or overhanging margins in teeth associated with recession were observed. Gingival recession was measured from the CEJ to the free gingival margin at mid-buccal area of each tooth by UNC - 15 probe. Radiographs of the patients were observed to know the periodontal status. The recession was classified as per the PD Miller's criteria into class I to class IV.



Figure 1 measurement of recession using UNC 15 probe

Results:

In all, 31% of patients had < 3mm recession whereas 68% of the patients had ≥ 3 mm recession. Chi square test was applied to correlate the variables.

Table 1 - CORRELATION OF GINGIVAL RECESSION WITH THE AGE OF THE PATIENT.

	GROUP I	GROUP II	GROUP III
	No. of subjects	No. of subjects	No. of subjects
<3 mm	22 (52.38%)	13 (30%)	3 (8.3%)
≥ 3 mm	20 (47.6%)	29 (69%)	33 (91%)
Total	42	42	36

In the younger age group 20 individuals had ≥ 3 mm, In the medium age group 29 patients had ≥ 3 mm recession while in older age group 33 patients had ≥ 3 mm recession. Thus as the age advanced, more number of individuals were seen to have gingival recession. This observation was significantly associated with recession.

Table 2- CORRELATION OF SEX WITH RECESSION

	GROUP I	GROUP II	GROUP III
	No. of subjects	No. of subjects	No. of subjects
MALE	25 (59%)	27 (64%)	22 (61%)
FEMALE	17 (40%)	15 (35.7%)	14 (38.8%)
Total	42	42	36

The correlation of sex and gingival recession was made. In all the three groups more number of males were suffering from gingival recession than the females. It can be concluded from table 2 that gingival recession is more prevalent in males though there was no significant relationship between the sex of the patient and gingival recession.

Table 3 CORRELATION OF RECESSION WITH THE USE OF SMOKELESS TOBACCO

	GROUP I		GROUP II		GROUP III	
	No. of subjects		No. of subjects		No. of subjects	
	<3 mm	≥ 3 mm	<3mm	≥ 3 mm	<3mm	≥ 3 mm
MODERATE	2	3	3	4	1	1
HEAVY	1	4	3	8	1	5
Total	3	7	6	12	2	6
	10	18	8			

Of all the subjects examined a total of 36 patients (i.e 30%) had the habit of chewing tobacco. Out of these 22 (61%) were heavy tobacco chewers. Out of these 80% of heavy tobacco chewers in group I, 72.7% of heavy tobacco chewers in group II and 83% of heavy tobacco chewers in group III were having ≥ 3 mm recession. Thus we can conclude that heavy tobacco users have more amount of recession than the moderate tobacco users, though this observation was not statistically significant.

Table 4 CORRELATION OF TOOTHRUSHING TECHNIQUE WITH RECESSION

	GROUP I		GROUP II		GROUP III	
	Number of patients with following technique		Number of patients with following technique		Number of patients with following technique	
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
<3mm	16	6	6	7	5	1
≥ 3 mm	17	3	24	5	19	11
Total	37	5	30	12	24	12

75% of the total subjects used horizontal scrub technique for brushing, and 24% of the total subjects used vertical technique for brushing. In group I, 40% of the subjects with ≥ 3 mm recession used horizontal scrub technique. In group II, 57% the subjects with ≥ 3 mm recession used horizontal scrub technique. In group III, 52% of the subjects with ≥ 3 mm of the total subjects used horizontal scrub technique. Thus we can conclude that horizontal scrub technique of brushing teeth might result in gingival recession.

Table 5 CORRELATION OF HIGH FRENUM ATTACHMENT WITH RECESSION

	GROUP I	GROUP II	GROUP III
	No. of subjects	No. of subjects	No. of subjects
<3mm	4	4	1
≥ 3 mm	5	3	2
Total	9	7	3

Out of all the patients examined 19 subjects, (i.e 15.8%) had the recession due to high frenum attachment either in maxilla or the mandible. This difference was not statistically significant.

Table 6 CORRELATION OF RECESSION WITH PLAQUE INDEX (by Sillness and Loe) 1964

	GROUP I		GROUP II		GROUP III	
	No. of subjects				No. of subjects	
	<3 mm	≥ 3 mm	<3mm	≥ 3 mm	<3mm	≥ 3 mm
GOOD	1	2	2	1	1	2
FAIR	16	11	9	14	1	6
POOR	5	7	2	14	3	23
Total	21	20	13	29	5	31

Association of recession with plaque index was calculated. Plaque index given by Sillness and Loe was used. Scores from 0 – 0.9 were given when the plaque score was good. 1 – 1.9 when the plaque score was fair and 2 to 3 when plaque score was poor. It can be observed in table 6 that patients with poor plaque index have higher amount of recession. This relation was not significant in group I and group III whereas it was significant in group II.

Table 7 CORRELATION OF GINGIVAL RECESSION AND SIMPLIFIED ORAL HYGIENE INDEX (Greene and Vermillion) 1964

	GROUP I		GROUP II		GROUP III	
	No. of subjects				No. of subjects	
	<3 mm	≥ 3mm	<3mm	≥3mm	<3mm	≥3mm
GOOD	7	2	1	1	1	1
FAIR	9	7	8	5	1	7
POOR	6	11	5	22	1	25
Total	22	20	14	28	3	33

Association of oral hygiene and gingival recession was calculated. It can be observed in table 7 that in group I, 11 subjects (26%), had poor oral hygiene and ≥3mm recession, in group II 22 subjects (52%) had poor oral hygiene and ≥3mm recession and in group III 25 subjects (69%) had poor oral hygiene and ≥3mm recession, it can be concluded that patients with poor oral hygiene have more amount of recession. Though this difference is not statistically significant.

Table 8 CORRELATION OF PERIODONTAL STATUS OF THE PATIENT WITH RECESSION

	GROUP I		GROUP II		GROUP III	
	<3 mm	≥ 3mm	<3mm	≥3mm	<3mm	≥3mm
NORMAL	1	1	0	0	0	0
SIMPLE GINGIVITIS	5	1	2	1	0	1
BEGINNING OF PERIODONTAL DISEASE	6	5	1	1	1	1
ESTABLISHED DISEASE	10	11	10	25	3	18
TERMINAL DISEASE	0	2	0	2	1	11
TOTAL	42	42	36			

The relationship of periodontal disease with the amount of recession was evaluated. In group I, 57 % of the individuals had established periodontal disease and 54.1% of these had mean recession ≥ 3mm. In group II 88% of the individuals had established periodontal disease and 72.9% of these individuals had mean recession ≥3mm. In group III 88% of these individuals had established periodontal disease .and 90% of these had mean recession ≥3mm. This relationship was not statistically significant.

Table 9 CORRELATION OF POSITION OF THE TOOTH WITH RECESSION

	GROUP I	GROUP II	GROUP III
Amount of recession	Patient with malpositioned tooth	Patient with malpositioned tooth	Patient with malpositioned tooth
<3mm	12	3	1
≥3mm	1	1	1

Recession was also related with the position of the tooth. In group I , 68.4% individuals showed recession due to mal- position of the tooth. Among these 74% of teeth were facially displaced and exhibited recession. 32.2% teeth were rotated and showed gingival recession . and 3% teeth were in cross bite and had recession. In group II 21% individuals had recession due to mal- position of the tooth 75% of teeth were facially displaced 16% were rotated and

9% were in cross bite. In group III 10% individuals had malposition and recession. This relationship was not statistically significant.

Table 10 CORRELATION OF TRAUMA FROM OCCLUSION WITH RECESSION.

	Group I	Group II	Group III
<3mm	3	1	1
≥3mm	2	9	4
TOTAL	5	10	5

Association of gingival recession and the presence of trauma from occlusion were also studied. It was found that 16.6% of all the individuals examined were having recession in relation to the tooth with occlusal trauma. Thus we can conclude that trauma from occlusion is one of the cause for gingival recession. Though this finding is not statistically significant.

Discussion:

This study was undertaken primarily to determine the common etiological factors for recession in the patients visiting the out patient department of Periodontology in Govt Dental College, Aurangabad. The results show that the younger age group had comparatively less mean recession than the older age group. Moreover it was seen in this study that males had relatively more gingival recession than females. These findings were in accordance to the previous studies done by by Susin et al on urban Brazilian in population in 2004 and who stated aging was strongly associated with a higher level of recession and males had more gingival recession than females. This difference could be due to high amount of smokeless tobacco habit in males in the area of our study and also vigorous toothbrushing practiced by males.⁷

It was found in this study that smokeless tobacco chewing was a cause for recession, it was observed that recession was present in the teeth adjacent to the location of keeping the tobacco quid. Similarly Robertson in his study found that the major effects of smokeless tobacco in the sample young male population were gingival recession and associated loss of attachment.⁸ Another major cause for gingival recession was poor oral hygiene and supragingival calculus which was in accordance with the study done by Susin et al but in contrast to the findings of Gorman who found that individuals with good oral hygiene showed greater recession than those with poor oral hygiene.^{7,9}

Gorman reported that malpositioned teeth and toothbrush trauma were the most frequent etiologic factors associated with gingival recession in this study also it was found that malposition and incorrect toothbrushing technique were the causes for gingival recession.⁹ Facial displacement of the tooth, rotation of the tooth in the arch and cross bite of the tooth were associated with teeth having recession it was also observed that teeth in malposition had recession that was <3 mm on an average. And there were more number of subjects who had recession related to a malpositioned tooth in group I as compared to group II and group III. Patients practicing horizontal scrub technique were seen to have associated recession.

Teeth associated with high frenum and occlusal trauma also showed the signs of recession in this study. Both these findings are in accordance with the study done by Gorman et al. who reported that occlusal trauma and high frenal attachments were causes for recession.

In present study mandibular teeth were affected with recession more than the maxillary teeth. Most commonly affected teeth being mandibular incisors, lateral incisors and canines. Similarly Susin et al in his study on Brazilian population reported that the teeth most affected with gingival recession ≥3 mm were the mandibular central incisors and the maxillary first molars⁷



Figure 2 recession occurring due to high amount of calculus



Figure 3 recession present in association with the tooth in the region of quid placement



Figure 4 recession present due to high mandibular frenum



Figure 5 recession in association with labially placed incisor.

Conclusion

A study on the teeth of 120 subjects in the outpatient department of periodontology in Government Dental College, Aurangabad, was done to determine the most common etiological factor for gingival recession. It was observed that as the age advances prevalence of recession increases, also the males were more affected with recession than females. Most common cause for recession was poor oral hygiene and high plaque index, established periodontal disease and increased pocket depth was the third most common cause of recession followed by horizontal scrub toothbrushing technique. Use of Smokeless tobacco habit was another cause of gingival recession where the location of keeping the quid corresponded to the site where gingival recession was present. Abnormal frenal pull and malposition of tooth in the arch and occlusal trauma were also important causes for the gingival recession.

REFERENCES:

1. Glossary of Periodontal terms 2001 4thed, American Academy of Periodontology
2. Ashish Kumar and Sujata Surendra Masamatti . A new classification system for gingival and palatal recession. *J Indian SocPeriodontol*. 2013; 17(2): 175–181.
3. Ali Banihashemrad, KazemFatemi,Seyed.Effect of Smoking on Gingival Recession . *Dent Res J* 2008; 5(1):1-4
4. Kassab MM , Cohen RE .The etiology and prevalence of gingival recession. *J Am Dent Assoc*. 2003;134(2):2205.
5. K Pradeep,P Rajababu, D Satyanarayana, V Sagar. Gingival Recession: Review and Strategies in Treatment of Recession. Hindawi Publishing Corporation Case Reports in Dentistry 2012:6
6. V. Anita, R. Vijayalakshmi, J Bhavna, Thyagarajan Ramakrishnan, A.Kuma and V. Bali . Double laterally rotated bilayer flap operation for treatment of gingival recession: A report of two cases. 2008;12(2): 51–54.
7. C Susin, A. Haas, R. Oppermann, O Haugejorden and Jasim M. Albandar . Gingival Recession: Epidemiology and Risk Indicators in a Representative Urban Brazilian Population. 2004; 75:1377-1386
8. P. B. Robertson, M. Walsh, J. Greene, f V. Ernster, D Grady and W. Hauck Periodontal Effects Associated With the Use of Smokeless Tobacco. *J Periodontol* 1990;61:438^43
9. Gorman W. Prevalence and etiology of gingival recession. *J Periodontol* 1967; 38:316